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Tropical Products Institute

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**The international market
for banana products for
food use**



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Ministry of Overseas Development

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Summaries

SUMMARY

The international market for banana products for food use

Banana products have received considerable attention in recent years as an outlet for fresh bananas rejected for export due to minor quality faults or culled at the packing stage, and as a possible diversion for surplus production which cannot be sold on the fresh fruit market. This report discusses the international trade in these products and the quality and packing requirements for the more important ones, banana figs and banana puree.

Trade in banana products for direct consumption, such as figs and chips, has been on a very small scale because they compare unfavourably in appearance, taste and even convenience with fresh bananas. Sales only prosper where fresh bananas are not readily available or keepability is required.

Banana figs are the only product for direct consumption by consumers which are traded in significant quantities. From 1970 to 1972, world exports fluctuated between 2,250 tonnes and 2,500 tonnes per annum. Ecuador supplied 95% of the total. The quality of her product and the efficiency of her production drove other producers out of the market. The main importing countries are France, the USA, the Federal Republic of Germany, Japan and Switzerland. The average value of imports was estimated to be between US\$300 and US\$330 per tonne in the period 1970 to 1973.

The market for banana products intended for sale to food manufacturers is slightly larger, but still very small by comparison with the fresh fruit trade. Exports of banana puree amount to about 12,000 tonnes per annum, those of banana powder about 200 tonnes and banana slices less than 100 tonnes.

Most banana puree is exported from Honduras and Panama in aseptically canned form, although small quantities of frozen puree are produced in Mexico and the USA. The aseptic canning process produces a product of good quality and durability without a modified flavour. Exports are, however, almost entirely dependent on one outlet, baby foods, for which demand in the main markets has reached saturation point. The USA takes almost two-thirds of all imports, while the German Democratic Republic and the Federal Republic of Germany each take over 1,000 tonnes per annum. Other Western European countries, Canada and Japan account for most of the balance of less than 2,000 tonnes. The value of imports into the Federal Republic of Germany in 1973 was US\$394 per tonne, which was representative of most markets, although imports into the USA were valued at less than half that figure.

Sales for other food manufacturing purposes are restricted by the bland flavour of bananas, the use of synthetic flavouring and the absence of a satisfactory product for whole or sliced bananas.

The conclusion must be that there is little prospect of a significant increase in demand for banana products and that there is little room in existing markets for new producers.

RESUME

Le marché international des produits de bananes destinés à l'alimentation

Au cours de ces dernières années, on a accordé une attention considérable aux produits de bananes en tant que débouché pour les bananes fraîches rejetées pour l'exportation à cause de défauts de qualité mineurs ou éliminées au stade de l'emballage, et en tant que voie de dérivation possible pour l'excès de production qui ne peut être vendu sur le marché des fruits frais. Dans ce rapport, on traite le problème du commerce international de ces produits et celui des exigences de qualité et d'emballage auxquelles doivent satisfaire les produits les plus importants, le bananes figues et la purée de bananes.

Le commerce des produits de bananes pour la consommation directe, tels que figues et chips, ne se faisait que sur une très petite échelle car, du point de vue aspect, goût et même agrément, ils ne supportent pas la comparaison avec les bananes fraîches. Les ventes ne marchent bien que là où il est difficile de se procurer des bananes fraîches et où il est nécessaire d'avoir une possibilité de conservation.

Les bananes figues constituent le seul produit pour la consommation directe par les consommateurs dont le commerce se fait en quantité significative. De 1970 à 1972, les exportations mondiales ont varié entre 2,250 tonnes et 2,500 tonnes par an. L'Equateur a fourni 95% du total. La qualité de son produit et le rendement de sa production ont refoulé les autres producteurs hors du marché. Les principaux pays importateurs sont la France, les Etats-Unis d'Amérique, la République fédérale d'Allemagne, le Japon et la Suisse. La valeur moyenne des importations a été estimée à \$US300—\$US330 par tonne dans la période de 1970 à 1973.

Le marché des produits de bananes destinés à la vente aux fabricants de produits alimentaires est légèrement plus étendu, mais encore très petit en comparaison du marché des fruits frais. Les exportations de purée de bananes atteignent environ 12,000 tonnes par an, celles de poudre de bananes environ 200 tonnes et celles de bananes en tranches moins de 100 tonnes.

La plus grande partie de purée de bananes est exportée par le Honduras et la Panama, la purée étant mise en boîtes aseptiquement, bien que de petites quantités de purée congelée soient produits au Mexique et aux Etats-Unis d'Amérique. La mise en boîtes aseptique fournit un produit de bonne qualité et de bonne stabilité sans que l'arôme soit modifié. Toutefois, les exportations dépendent presque entièrement d'un seul débouché, les aliments pour bébés, pour lesquels la demande sur les principaux marchés a atteint le point de saturation. Les Etats-Unis d'Amérique prennent presque les deux-tiers de toutes les importations, tandis que la République démocratique allemande et la République fédérale d'Allemagne prennent chacune plus de 1,000 tonnes par an. La majeure partie du reliquat de moins de 2,000 tonnes va aux autres pays d'Europe occidentale, au Canada et au Japon. La valeur des importations en République fédérale d'Allemagne a été en 1973 de \$US394 par tonne, ce qui était représentatif de la plupart des marchés, bien que les importations aux Etats-Unis d'Amérique aient été évaluées à moins de la moitié de ce chiffre.

Les ventes destinées à la fabrication d'autres denrées alimentaires sont limitées par la flaveur douce des bananes, l'utilisation de parfums de synthèse et l'absence d'un produit satisfaisant pour les bananes entières ou en tranches.

Il y a lieu de conclure qu'il y a peu de perspectives pour que la demande en produits de bananes augmente significativement et qu'il y a peu de place sur les marchés existants pour de nouveaux producteurs.

RESUMEN

El mercado internacional de productos del plátano para uso alimenticio

En los últimos años, los productos del plátano han recibido considerable atención como una salida para los plátanos frescos no aptos para la exportación debido a pequeños defectos de calidad o rechazados en el momento del embalaje, y como otra posible utilización para los excedentes de producción que no pueden venderse en el mercado de frutos frescos. Este informe discute el comercio internacional de estos productos y las exigencias de calidad y embalaje de los más importantes, higos de plátano y puré de plátano.

El comercio de productos del plátano para consumo directo, como higos y rebanadas, se ha realizado en pequeña escala a causa de su desfavorable comparación en apariencia, gusto e incluso aplicación con los plátanos frescos. Las ventas prosperan solamente donde no se dispone con facilidad de plátanos frescos o se exige la posibilidad de conservación.

Los higos de plátano son el único producto para el consumo directo que se comercializa en cantidades significativas. Desde 1970 a 1972, las exportaciones mundiales fluctuaron entre 2,250 y 2,500 toneladas al año. El Ecuador suministró el 95 por ciento del total. La calidad de su producto y la eficiencia de su producción eliminaron del mercado a otros productores. Los principales países importadores son Francia, Estados Unidos, La República Federal de Alemania, Japón y Suiza. El valor medio de las importaciones se estimó entre 300 y 330 dólares USA por tonelada en el período de 1970 a 1973.

El mercado de productos del plátano dirigido a las industrias alimentarias es ligeramente superior, pero todavía muy pequeño en comparación con el de fruto fresco. Las exportaciones de puré de plátano se elevan a unas 12,000 toneladas anuales, las de harina de plátano a unas 200 toneladas y las de rebanadas de plátano a menos de 100 toneladas.

Honduras y Panamá exportan la mayor parte del puré de plátano en envases asépticos, aunque México y Estados Unidos producen pequeñas cantidades de puré congelado. El proceso de envasado aséptico da lugar a un producto de buena calidad y durabilidad sin alteración del sabor. Las exportaciones dependen, sin embargo, casi totalmente de una sola salida que es la de los alimentos infantiles, para los cuales la demanda de los principales mercados ha alcanzado el punto de saturación. Los Estados Unidos absorben casi las dos terceras partes del total de las importaciones, mientras que la República Democrática Alemana y la República Federal de Alemania absorben cada uno más de 1,000 toneladas anuales. Otros países de Europa Occidental, Canadá y Japón figuran en la mayoría de los balances de menos de 2,000 toneladas. El valor de las importaciones de la República Federal de Alemania, en 1973, fué de 394 dólares USA por tonelada, la cual es representativa de la mayoría de los mercados, aunque las importaciones de los Estados Unidos se valoraron en menos de la mitad de esta cifra.

Las ventas para otros propósitos de la industria alimentaria están restringidos por el escaso aroma de los plátanos, el uso de aromatizantes sintéticos y la ausencia de un producto satisfactorio a base de plátanos enteros o en rebanadas.

Como conclusión puede decirse que existen escasas perspectivas de un aumento significativo de la demanda de productos del plátano y que hay pocas posibilidades en los mercados existentes para nuevos productores.

Introduction

Over the years the problem of the profitable utilization of surplus or reject bananas has received considerable attention.

In the production of bananas for the fresh fruit trade there are usually considerable quantities of reject fruit available, which, although of satisfactory eating quality, are unsuitable for export because they are undersized, misshapen, or disfigured by skin blemishes, etc. and packing the fruit in cartons prior to shipment results in a large number of culled bananas being available at the centralised packing stations.

In addition, as world production of bananas has expanded at a greater rate than consumption of the fresh fruit and as import markets have become increasingly competitive, some producers are finding it more and more difficult to dispose of their whole output profitably on the fresh fruit market. These have, naturally, considered the possibility of utilizing part of their crops for the production of banana products.

The processing of bananas, however, has not been of great importance except to supply the requirements of small specialized markets, and banana products represent an insignificant quantity of the total tonnage of bananas entering international trade. Unfortunately, the large-scale commercial development of banana products has been handicapped by the fact that, when processed, the fruit has a tendency to lose much of its flavour and to discolour. Moreover, unless the ripening process is carefully controlled many banana varieties are also liable to develop an astringent off-flavour when processed.

The chief products made from bananas are dried figs, canned or quick-frozen puree, banana powder, flour, flakes, chips, canned banana slices and jam; of these, figs, powder, puree and canned slices are the most important in international trade. Unfortunately statistical data relating to the production and trade in banana products are very fragmentary and often a little out-of-date, so that it is difficult to assess the total quantities of the various products entering international trade. Moreover, the details given for dried bananas sometimes include, in addition to the dried figs, small quantities of banana powder, flour and possibly flakes and chips. In this report, however, it is assumed that the item 'dried bananas' consists almost exclusively of dried banana figs, unless it is stated otherwise.

Banana figs

Banana figs, or fingers, as they are sometimes termed, normally consist of the whole peeled fruit which has been carefully dried so as to retain its shape; occasionally the fruit is halved or sliced into slivers to facilitate drying. Banana figs are widely prepared throughout the tropics, often by drying the peeled fruits in the sun, and are consumed as a sweetmeat by the local population. For many years limited quantities of dried banana figs have entered international trade, but the product has never achieved widespread popularity, except during World War II when shortage of shipping space seriously curtailed supplies of the fresh fruit in many banana importing countries. Nowadays sales of banana figs in most developed countries are restricted to vegetarian or health food stores, although limited quantities are also used for manufacturing purposes.

Banana figs compare unfavourably with fresh fruit in appearance and texture, tending to be dark and tacky. The banana flavour is also altered and is less subtle. It is not surprising therefore that there is a marked preference among many consumers for the fresh fruit and since supplies are now readily available in most countries at reasonable prices, it seems doubtful whether any large demand can be stimulated for banana figs.

QUALITY AND PACKING OF BANANA FIGS

Dried banana figs of good quality are of an even dark brown colour. The texture should be firm, but not hard or leathery, and free from any hard crust or excessive stickiness on the surface. The figs should also be free from fungal, bacterial or insect contamination.

Most banana figs entering international trade are ready packed for retail sale in units of $\frac{1}{4}$ or $\frac{1}{2}$ kilograms, and are wrapped in clear polythene or cellophane. A $\frac{1}{4}$ kilogram pack, for example, contains eight figs, arranged two deep; the pack should measure between 10 and 12 centimetres in length and between 6 and 7 centimetres in width.

These retail packs are exported in fibre board cartons of up to $12\frac{1}{2}$ kilograms capacity.

Limited quantities are also exported in bulk in polythene lined wooden boxes of a similar or larger capacity. Figs packed in bulk are intended for manufacturing purposes or for retail outlets wishing to package the produce under their own label.

MAJOR PRODUCERS AND EXPORTERS OF BANANA FIGS

For many years Ecuador and Brazil have been the major producers of dried banana figs on a commercial scale in South America. In Africa the fruit has been processed commercially in the Malagasy Republic, Liberia, Angola, the

Cameroon Republic and Zaire. In addition, there has been some occasional small-scale production in many other banana producing countries.

Most of the plants producing dried banana figs were small and in many instances there was need to improve their processing techniques in order to produce an attractive dried product. In addition, maintenance of hygiene standards, particularly the prevention of insect infestation, sometimes proved to be difficult. Attempts to improve processing techniques and organize these small industries were undoubtedly handicapped by the fact that there was only a very limited demand for the product in most markets.

In 1957 the Ecuadorian banana industry, faced with the problem of disposing profitably of large quantities of surplus bananas, began to organize a dried banana processing industry on modern efficient lines, with the result that there was a very considerable improvement in the quality of banana figs produced in Ecuador.

EXPORTS

The international trade in banana figs amounted to about 2,500 tonnes in 1972.

Trade expanded considerably in the early sixties as a result of increased production and export promotion from Ecuador, but, from a high point in 1965 of 2,650 tonnes, exports dropped sharply to 1,900 tonnes in 1967 due to lower production in Ecuador coinciding with a declining interest in the export market in other producing countries; they had found that they were unable to compete with the high quality Ecuadorian products. This latter trend has persisted and the recovery in trade since 1967 has been due to a steady increase in exports from Ecuador. As a result, Ecuador has consolidated its dominating position in the market to the extent that it supplied 97% of recorded exports in 1972.

Table 1 shows exports of banana figs from those countries which publish this data. Some other countries may be making exports, but the quantities involved are thought to be very small.

Table 1
Exports of banana figs

	tonnes									
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Ecuador	1204	1363	1999	2042	1612	1760	1937	2250	2103	2424
Brazil	30	124	156	20	14	8	3	7	131	20
Malagasy Rep.	605	149	441	275	257	163	138	225	8	57
Angola	69	66	52	33	13	13	9	6	6	4
Thailand	...	4	2	12	2	—	25	—	—	—
Total	1908	1706	2650	2382	1896	1944	2112	2488	2248	2505

Notes: (1) Ecuador's statistics do not differentiate between banana products between 1966 and 1972 and may, therefore, include small quantities of banana flour (see Table 5).
— Nil or negligible ... not available

Source: Trade Returns

Ecuador has been the main supplier to all the major importing countries. Brazil has exported regularly to the US market and more occasionally to Europe while the German Federal Republic was the main importer of Angolan figs when they were exported in significant quantities. The Malagasy Republic's output has gone almost exclusively to France. Appendix Tables 1 to 4 show exports from Ecuador, the Malagasy Republic, Brazil and Angola by country of destination.

IMPORTS

The countries importing the largest quantities of banana figs are France, the USA, the Federal Republic of Germany, Japan and Switzerland, usually in that order.

Table 2, below, shows imports into the main consuming countries.

Table 2
Imports of banana figs

	tonnes										
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Germany, Fed. Rep. of	302	398	358	245	250	373	372	365	498	428	393
France	717	416	785	691	636	540	653	713	641	605	568
UK ¹	44	44	22	40	58	52	60	69	86	75	63
Italy	8	7	247	—	1	—	1	—	—	15	...
Netherlands ²	13	280	293	54	10	...	...	2	...	9	...
Switzerland ²	346	76	...	273	204	...	...	241	...	206	...
Denmark	...	...	...	...	...	3	1	5	4	2	—
Norway	...	...	...	—	—	3	1	1	—	—	...
Finland	...	9	11	7	2	3	10	7	13	18	3
Sweden	10	11	16	14	8	12	13	19	22	25	...
USA ³	5	99	355	219	313	331	350	345	438	657	354
Japan	289	400	600	747	403	366	323	312	345	264	260
Total	1734	1839	2687	2294	1896	1683	1784	1836	2047	2395	...

Notes: (1) Total UK imports of dried bananas are only shown from 1969; up to 1969, only imports from Ecuador are shown.
(2) Apparent imports: large imports into Netherlands in 1964 and 1965 probably intended for Switzerland.
(3) Allowance made for import of banana flour from Brazil which is included with dried bananas.
— Nil or negligible ... not available

Source: Trade Returns

In addition to the countries in Table 2, a number of South American countries, notably Argentina and Chile, are importing banana figs from Ecuador and Brazil. It appears from export statistics that their total imports did not exceed 50 tonnes annually in any year. It is also possible that some other European countries, which do not record imports of dried bananas, are importing small quantities from Ecuador. Ecuador's exports to the Federal Republic of Germany have exceeded recorded imports into the Federal Republic by around 100 tonnes in most years when comparisons are possible. Part of this quantity can be accounted for by resales before arrival and transshipments to the other West European countries mentioned, but it seems likely that countries, which normally import through bonded warehouses in the Federal Republic of Germany, are taking around 50 tonnes per year.

If allowance is made for these additions, and for imports into Switzerland in excess of 200 tonnes in those years for which data is not available, the totals for exports and imports correspond closely, with the exception of 1970.

France

For many years, the French market was dominated by supplies of cheap dried bananas from the Malagasy Republic. Imports increased significantly in 1963 when the Malagasy Republic's exports were guaranteed by CODAL (Comptoir Industriel de Produits Alimentaires). Subsequently the product from the Malagasy Republic was unable to compete with the higher quality of the product from Ecuador, which was available in increasing quantities, and CODAL withdrew from the trade in 1966. The size of the market in France remained virtually unchanged, however, although the major share now belongs to Ecuador. A number of small producers in the Malagasy Republic have continued to ship dried bananas, packed in the traditional fashion of a wrapping of banana leaves, but the size of their exports has declined sharply, especially in the 1970's. It was reported in 1967 that a significant proportion of the dried bananas imported were

used for manufacturing purposes (Kay 1967). This is probably still the case, although the supplier is now Ecuador. Appendix Table 5 shows French imports by country of origin.

USA

Official statistics for imports of dried bananas into the USA include a small proportion of banana powder and banana flakes as well as banana figs. In order to aim at a more accurate figure for banana figs in Table 2, exports of banana powder from Brazil to the USA were subtracted from imports of dried bananas shown as coming from Brazil. The official trade returns are shown in full in Appendix Table 8.

Imports started on a significant scale in the mid 1960's. They oscillated between 300 and 350 tonnes until 1971, when they increased to 438 tonnes and, in 1972, they reached 657 tonnes. The 1973 figure shows a reversion to the former level.

The Federal Republic of Germany

Dried banana figs have been consumed in the Federal Republic of Germany for many years. The product has enjoyed limited sales, mainly in health food stores and, in addition, limited quantities are utilized in the manufacture of certain specialized fruit confections, such as crystallized or candied banana slices, banana slices in kirsch liqueur and chocolate covered banana slices (Perry 1961).

Appendix Table 6 gives details of imports of dried bananas, which include some banana powder from Brazil. In Table 2, these exports of banana powder from Brazil, which are not shown in the import statistics for banana powder and which are probably included under dried bananas, were subtracted from the import figures for dried bananas.

The imports of banana figs in the period 1971 to 1973 at 440 tonnes per annum were 25% higher than imports in the period 1963 to 1965. This is equal to an annual growth rate of just under 3% per annum. Ecuador is now the only regular supplier to the market as imports from Brazil and Angola have ceased.

Japan

When Japanese exchange restrictions were relaxed in April 1963, an impressive expansion occurred in Japanese imports of both fresh and dried bananas. After 1963, Japan provided an important outlet for the expanding production of dried bananas in Ecuador and became the largest importer of this product in 1966.

Since then imports of dried bananas have declined from 750 tonnes to 260 tonnes in 1973, while imports of fresh bananas have more than doubled, to almost a million tonnes.

Appendix Table 7 shows imports of dried bananas by country of origin. In addition to the regular imports from Ecuador, small lots have been imported occasionally from a number of Asian countries.

Switzerland

Imports of banana figs are not shown as a separate item in the official trade returns, but data from exporting countries confirm the impression that Switzerland is an important importer. However it appears that imports have declined from 350 tonnes in the years 1963 and 1964 to around 200 tonnes in 1972. Exports destined for Switzerland are sometimes recorded against the Netherlands as they pass through the Dutch ports in transit. In fact, Dutch imports for their own consumption have not exceeded 20 tonnes per annum.

Banana figs are sold mainly in retail stores and are popular with skiers and mountaineers who require a light-weight, concentrated foodstuff. As in other countries, sales to the general public have suffered as the supplies and distribution of fresh bananas have improved.

PRICES

Table 3 sets out the value per tonne of exports of dried bananas from Ecuador into the main importing countries. The figures for the Federal Republic of Germany are probably misleading, since German importers report that they have, in fact, paid less than the value of imports into France – US\$365 per tonne in 1973.

Table 3
Value of imports from Ecuador

	US\$ per tonne, cif										
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
France	363	350	372	390	371	342	365	332	332	303	365
USA	...	889	826	661	662	722	793	794	840	836	859
Germany, Fed.											
Rep. of	358	421	487	494	554	683	692	663	719	759	805
Japan	376	378	370	373	362	342	331	329	339	332	507

Note: ... not available

Source: Derived from Trade Returns

Other dried banana products

Banana powder, flour, flakes and chips are other products which can be prepared by dehydrating the fresh fruit. They are, however, of considerably less commercial importance than banana figs and currently only very small quantities enter international markets.

BANANA POWDER AND BANANA FLOUR

Banana powder is prepared from the fully ripe fruit and finds a limited use as a flavouring material, chiefly in the baking industry in the preparation of fillings for cakes and in the manufacture of cream biscuits. Attempts to develop the commercial production of banana powder have been made in several banana producing countries, but in many instances the products have tended to be unsatisfactory as regards colour and flavour. Banana powder is extremely hygroscopic and susceptible to the development of off-flavours, unless it is packed in moisture-proof containers. In addition, it is also liable to insect infestation unless it is processed and packed under hygienic conditions.

Banana flour is prepared normally from the green unripe fruit or from plantains and is sold mainly in local markets of producing countries. Most of the banana flour is produced from green fruit, which is sun-dried or dried in crude ovens, and under these conditions the quality of the product is very variable.

It was estimated that in 1966 the annual consumption of banana and plantain flour in Ecuador amounted to approximately 2,700 tonnes a year and that banana flour made up about 85% of this total. No more recent figures or data for other countries are available, although it is reported that a plant in Ecuador is still operating.

Unfortunately the terms banana powder and banana flour are sometimes used synonymously. Trade returns, such as those used in Tables 4 and 5, show only one category — banana flour, which is composed mainly, if not exclusively, of banana powder.

Table 4
Exports of banana flour from Brazil and Ecuador

	tonnes									
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Brazil	280	90	96	128	144	109	155	76	36	17
Ecuador	...	5	16	7	15	...	...	...	...	15

Note: ... not available

Exports

The main supplier of banana powder has been Brazil. Her official trade returns show a decline in exports from a range of 100 to 150 tonnes per year in the mid

Table 5

Imports of banana flour

		1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
France	Total	18	—	8	49	32	36	56	57	87	99	117
	of which from											
	Ecuador	—	—	—	—	—	—	—	26	11	17	—
Germany, Fed. Rep. of	Brazil	—	—	—	44	28	30	38	30	67	61	61
	others	18	—	8	5	4	6	18	1	9	21	56
	Total	133	—	47	87	65	38	14	90	84	50	78
USA	of which from											
	Ecuador	...	...	16	11	8	—	14	90	83	50	78
	Brazil*	133	—	31	76	57	37	—	—	—	—	—
USA	others	...	...	—	—	—	1	—	—	1	—	—
	from Brazil*	143	82	61	41	82	61	81	41	31	17	...

Notes: — nil or negligible ... not available

Sources: Import returns, except for Brazilian imports into the Federal Republic of Germany and the USA. *These latter statistics are derived from Brazilian export returns, because the Federal Republic of Germany does not show any imports of banana flour from Brazil, probably including them with dried bananas, and the USA's returns do not shown banana flour as a separate item.

and late 1960's to under 50 tonnes in 1971 and 1972. Ecuador's export statistics show exports of banana flour between 5 and 20 tonnes per year, but the import statistics of France and the Federal Republic of Germany — two of the three major consumers, the other being the USA — indicate a higher level of exports from Brazil and Ecuador than are shown in the official export returns. The data from these importing countries suggest that exports from Brazil and Ecuador have both been around 100 tonnes per annum in the 1970's.

Table 4 shows the official trade returns for exports of banana flour from Brazil and Ecuador.

Table 5 shows imports into France, the Federal Republic of Germany and the USA, while Table 6 shows the value of imports per tonne into France and the Federal Republic of Germany.

Table 6
Value of imports

	US\$ per tonne, cif								
	1965	1966	1967	1968	1969	1970	1971	1972	1973
Germany, Fed. Rep. of from Ecuador	1210	990	830	...	940	980	1040	1050	1210
France from Ecuador	...	...	...	...	...	1230	1230	1330	...
from Brazil	...	890	885	845	945	1070	1030	960	1025

Note: ... Not available
Source: Derived from Trade Returns

BANANA FLAKES

From time to time attempts have been made to produce a dehydrated banana flake and to market the product either for use as a flavouring or as a breakfast 'cereal'. About twenty-five years ago the product was produced successfully on a limited scale in Brazil, mainly for local sale, although moderate quantities were exported. More recently interest has been shown in the production of banana flakes in Israel and in the United States, but as far as can be ascertained the demand for the product is very limited and its susceptibility to flavour deterioration on storage and the necessity for packing it, even for retail sale, in moisture-proof containers has undoubtedly handicapped its commercial development.

ACCELERATED FREEZE DRIED BANANA SLICES

The production of accelerated freeze-dried banana slices has been carried out in the United States, where the product has been utilized mixed with cornflakes in the production of a breakfast food. However, the Kellogg Co., Michigan, ceased production of its banana breakfast cereal in 1966 after testing the market carefully. It would appear that the product had a very limited appeal owing to its poor flavour which was described as "cardboard discs in a box". The company found that for the best results the bananas required to be fully ripe when freeze dried, but the cost of erection of controlled ripening rooms at the processing plant made the process too expensive in relation to the returns obtained from the breakfast cereal market.

Banana puree

Banana puree is a product which has become of increasing importance during the past decade. It is produced by pulping the peeled ripe fruits and preserving the resultant puree by one of the following methods:— (i) canning aseptically, (ii) acidification followed by normal canning, (iii) quick-freezing. Of these methods, canning aseptically is of most interest to banana producing countries since with this process a puree is obtained with a flavour very similar to that of a fresh ripe banana. Acidification of the banana pulp followed by heat preservation produces a puree with a somewhat modified flavour, which has not been found acceptable for the manufacture of baby foods. The use of quick-freezing also produces a puree with a fresh banana flavour, but involves heavy costs for transporting the product to the main consuming markets.

Large-scale commercial production of banana puree is undertaken by the quick-freezing method in the United States and Mexico and by canning aseptically in the Dominican Republic, Honduras and Panama.

Aseptically canned puree is also being produced in small quantities in Brazil for export and the possibility of expanding this trade is under consideration.

Spasmodic attempts have been made to process acidified banana puree on a small-scale in certain other countries, such as Australia, Brazil, the Republic of South Africa, Jamaica and Dominica, but these processors have usually experienced difficulty in marketing their product successfully. Some Central America countries have occasionally produced small job lots of quick frozen puree for the United States market, while Israel has attempted to market frozen puree in the past.

Banana puree is used almost entirely by the food manufacturing industry, chiefly in the production of baby foods and in a small way as a flavouring in ice-cream, biscuits and cakes.

EXPORTS

Exports of banana puree from 1963 to 1972, where available, are shown in Table 7.

The processing of banana puree by the Martin Aseptic canning technique was started in the Dominican Republic in the 1950's by the Grenada Company, a subsidiary of the United Fruit Company of America. After some five years' preliminary development work the cannery at Puerto Liberador began to operate on a large-scale in October 1958 and at that time was reported to be capable of producing some 1,400 long tons of puree a year, which was quickly increased to some 2,200 long tons. The original object of the operation was to utilize Gros Michel bananas rejected by the fresh fruit trade, but in the early stages it was found that this variety was not very satisfactory for processing and the production of a more suitable local variety had to be organized to supply the requirements of the cannery. (Food Trade Review 1959).

Table 7

Exports of banana puree

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Dominican Republic	4169	3934	7152	—	—	—	—	—	—	—
Honduras	—	—	—	1112	7002	10295	11953	...	...	...
Mexico	...	...	1100	...	...	173	208	183	924	...
Panama	—	—	—	—	—	—	—	—	—	1455

Notes: — nil or negligible ... not available

Sources: Trade returns of exporting countries with the exception of Mexico's exports, which are derived from the import returns in the USA.

The entire output of the cannery at Puerto Liberator was exported and by 1960 an additional £1,000,000 was reported to have been spent on extending the existing plant with a view to increasing its capacity to some 14,000 long tons a year (Food Trade Review 1960). However, the efficient operation of the plant appears to have been handicapped during the early nineteen sixties by a combination of continuing labour and price disputes, hurricane damage and an attack of Panama disease and in the mid 1960's the Grenada Company ceased operation. The puree plant was dismantled by the United Fruit Company and was shipped to Honduras where it started operating at La Lima during the autumn of 1966. At that time, large quantities of banana puree were being produced in the United States for the domestic market. However, once the plant in Honduras was established, production in the USA declined. The main reason for this seems to have been the rising cost of labour in the USA.

As a result, production of banana puree at the plant in Honduras was increased steadily. It reached about 12,000 tonnes in 1969 and was maintained around that level until another plant owned by the United Fruit Company in Panama commenced exporting in 1972. The plant in Honduras escaped damage by the hurricane in 1974 and sufficient quantities of bananas are available to keep it in operation. The capacity of the plant in Panama (reportedly 12,000 tonnes) is large enough to meet any short-fall in Honduran output.

The export figures for Honduras in Table 7 are derived from trade returns, which cover 'dried, canned and preserved fruits', and, therefore, the figures may include quantities of other fruits and other banana products, particularly banana slices in syrup. However, the quantities of these other commodities are likely to be small. Details of exports from the Dominican Republic and Honduras are shown in Appendix Tables 9 and 10.

In the Philippines, an aseptic canning plant commenced production in 1974. It has a capacity to produce almost 8,000 tonnes of puree per annum from various tropical fruits, including banana. It is intended that the banana puree will be exported to the USA and other markets in competition with existing producers.

Exports from Mexico consist of quick-frozen banana puree. They are made exclusively to consumers on the West Coast of the USA. The high cost of transport in refrigerated trucks and railway wagons make distribution elsewhere uneconomic while imported aseptic banana puree is available. The increase in exports from Mexico in 1971 reflects a shift from domestic suppliers of frozen puree due to the more competitive terms offered from Mexico.

IMPORTS

Very few countries show banana puree as a separate item in their trade returns, but include it with other fruit purees in composite categories. It is, therefore,

Table 8

Imports of banana puree

	tonnes										
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
USA	...	...	...	...	...	6642	5280	6315	7246	8125	7570
Canada	204	294	128	328	591	535	540	536	517	419	430
German Federal Republic	41	212	323	448	434	543	1383	990	931	1408	1280
United Kingdom	94	17	228	—	131	500	461	295	243	378	430
France	...	48	67	43	76	83	56	56	218	292	235
Italy	4	52	—	26	31	64	112	200	327	219	...
Netherlands	—	69	57	16	12	15	—	57	50	138	112
Belgium—Luxembourg	...	...	...	...	...	5	4	16	12	7	...
Austria	—	—	—	1	—	41	35	66	44	40	53
Spain	—	—	—	—	9	7	19	4	51	63	8
Switzerland	—	—	29	30	24	135	63	260	171	229	317
Sweden	40	11	36	15	30	26	25	23	34	67	60
German Democratic Republic	...	...	...	...	...	...	...	...	...	1300 ^e	...
Japan	—	15	31	32	49	28	65	89	181	273	158
Australia ('000 litres)	—	—	—	—	—	—	—	—	5	79	...

Notes: ... not available — nil or negligible e estimate

Source: Derived from Trade Returns

difficult to obtain completely accurate details of the quantities imported into most countries. Nevertheless, it is possible to derive estimates on the basis of the origin and value in the composite categories. These estimates, which are confirmed by trade enquiries, are set out in Table 8. A breakdown of these imports by country of origin into the USA and other countries shown in Table 8 are set out in Appendix Tables 11 and 12, respectively.

USA

The United States has been by far the largest importer and consumer of banana puree. It is, however, extremely difficult to obtain information concerning the quantities of banana puree being consumed since domestic processors have been an important source of supply in addition to imports.

It appears that total consumption has been fairly stable throughout the last decade at around 9,000 tonnes, but that there has been a drift towards imports and away from domestic production. It was estimated by the United States Department of Agriculture that in 1965 imports totalled 3,500 long tons, of which 2,400 long tons consisted of canned puree from the Dominican Republic and 1,100 tons of frozen puree from Mexico. The balance, some 5,000 or 6,000 long tons, was processed domestically from imports of fresh fruit. By 1971, it appears that imports accounted for 7,250 tonnes out of a total consumption of 8,500 tonnes. Of these imports, 6,350 tonnes were canned puree from Honduras and 900 tonnes frozen puree from Mexico. Domestic supplies consisted entirely of frozen puree.

More recent enquiries indicate that there has been little change in consumption, except that imports of aseptically canned puree may have increased at the expense of imports of frozen puree from Mexico.

About 75% of the banana puree consumed in the United States is used by baby food manufacturers. Other users are bakeries, including the production of banana bread, and essence manufacturers; banana essence is used in milk shakes and ice-cream.

Baby food manufacturers expect their usage to remain at about the present level or to decline slightly. The trend in demand will depend on the birth rate, since the market for baby foods is considered to be fully exploited.

West European Markets

All the banana puree consumed is imported, apart from about ten tons of quick frozen puree produced annually in France. With this exception, only aseptically canned puree from Honduras and Panama appears to be used. It has been reported that a Brazilian exporter has supplied up to 200 tonnes annually of aseptically canned puree to Italy in bulk and in retail packs, but it has not been possible to identify this in the trade returns.

Sales of banana puree in European markets are even more heavily dependent on the demand from baby food manufacturers than in the United States. Banana bread, an important outlet in the USA, is virtually unknown in Europe, while its use as a flavouring for ice-cream is restricted to the Federal Republic of Germany where about 120 tonnes per annum are reported to be consumed in ice-cream (ITC 1974). Elsewhere synthetic banana flavours are preferred in ice-cream, because of their cheapness and the quality of their flavour.

The second most important outlet in Western Europe is in the manufacture of yoghurt. It is reported that in the Federal Republic of Germany about 150 tonnes of banana puree are used for this purpose and in France less than 50 tonnes, including the ten tonnes of quick-frozen puree produced domestically. However, its use in these markets and elsewhere is limited by two factors: firstly, banana flavour has become less popular and, secondly, consumers prefer yoghurts with solid fruit pieces in them to those of the purely puree type (ITC, 1974).

It is partly with this latter use in mind that the United Fruit Company developed a new product, canned sliced bananas in acidified sugar syrup. This product is discussed later.

Small quantities of banana puree are used in the manufacture of certain alcoholic beverages in the Federal Republic of Germany and in Italy.

In fruit-based baby foods, banana is not the most popular flavour, but consumer research shows a fairly high level of acceptance in terms of appearance, texture and flavour. Its cost to manufacturers has been reasonably competitive with other fruits, such as apricots, pears and peaches. However, banana puree is always blended with other ingredients, mainly other fruits or cereals¹. This is probably because fresh bananas can be fed to older babies and are readily available, relatively cheap and easy to prepare. The implication of this market picture is that it is unlikely that banana puree consumption will increase at the expense of other fruits and that other fruits could be substituted quite easily for banana puree in baby foods should the supply be reduced or if prices became uncompetitive. At the present time, baby food manufacturers expect that their demand for banana puree will move more or less in line with baby food sales.

Although the level of consumption of processed baby foods is lower in Europe than in the United States, it appears that most large markets are reaching saturation point. In the Federal Republic of Germany, production of fruit and vegetable based baby foods actually declined by 7% between 1972 and 1973; in the United Kingdom, the market is expected to remain fairly steady and in the Netherlands it may increase slightly. The exception to the rule is France, where strained and junior foods were relatively unknown until recently. The market has expanded at a very fast rate in the 1970's: it doubled between 1969 and 1971 and was expected to double again by 1975. The growth was reflected in the sharp increase in banana puree imports in 1971. However, in all West European countries, declining birth rates are reducing the number of potential customers and this trend is not expected to be reversed in this decade.

(1) It is interesting to note that banana puree, which has been dehydrated, is preferred to banana powder or banana flakes for use in dry cereal baby foods.

In Eastern Europe, the German Democratic Republic is the only significant market. It is reported to be importing about 1300 tonnes annually. This represents a high level of consumption by West European standards. The potential of this and other Eastern European markets is not known.

It is likely that the demand for banana puree will increase in Southern European countries, principally in Italy where baby food sales are growing by 6% annually, but also in Spain, Portugal and Greece, since these countries have expanding baby food markets. But the increased demand from these markets could amount to no more than a few hundred tonnes, given the size of the populations of these countries.

Outside Europe and North America, Japan is the only country importing over 100 tonnes per year. Her imports have increased in the 1970's, but remain at a low level for a country of her size. It is likely that demand will increase in the future if Western consumption patterns continue to be adopted.

PRICES

The prices of banana puree to users are negotiated on an individual basis and depend on the type of puree, the type of packing and other commercial considerations. The unit value of imports of aseptic puree into the various consuming countries have reflected these differences, but have still fallen within a narrow range. The unit values of imports into the Federal Republic of Germany, which are shown in Table 9, indicate that there has been very little change in prices over the decade up to 1973.

Table 9
Value of imports into the Federal Republic of Germany

									US\$ per tonne, cif	
1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
332	313	320	340	313	343	336	341	375	323	394

Source: Derived from Trade Returns

In the USA, the cost of quick-frozen banana puree imported from Mexico has tended to be higher than the cost of aseptic banana puree, although the general price level has been lower. In Table 10, the unit values of imports of these two types are compared.

Table 10
Value of imports of banana puree into the USA

				US\$ per tonne, cif			
				1968	1969	1970	1971
Quick frozen (Mexico)				202	197	202	168
Aseptic (Honduras)				169	155	145	141

For comparison with the import value data, the unit value of exports from the Dominican Republic and Honduras are shown in Table 11. These values are, of course, on an fob basis compared with the cif basis of imports, and figures for Honduras may include exports of some other fruits.

Table 11
Value of exports of banana puree

	US\$ per tonne, fob										
	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Dominican Republic	187	188	192	—	—	—	—	—	—	—	—
Honduras	—	—	—	193	197	200	195	...	...	...	...

Notes: — nil or negligible ... not available

Source: Derived from Trade Returns

QUALITY AND PACKAGING OF ASEPTICALLY CANNED BANANA PUREE

The quality standards for banana puree are especially strict because the product is used mainly in baby foods. Imports must not only meet the national regulations on foodstuffs, but also baby food manufacturers' own quality specifications. There are small variations between each set of specifications, but they conform more or less to the quality specifications set out below, which are derived from users' standards:—

Physical standards and characteristics

The product shall be derived from sound, bright bananas that have been properly ripened to optimum (grade 7) maturity. They shall be firm and free from disease, mould, rot, damage and peel rag. The pulp obtained shall be strained through non-aerating stainless steel finishers whose perforations shall not be over 0.060 inches in diameter. At no instance in the process shall the material be allowed to come into contact with iron or copper surfaces.

It shall have the full, ripe banana flavour free from all off-flavours and off-odours. The texture shall be typically soft and palatable. The colour shall be a light creamy white and there shall be a complete absence of black specks, fibrous materials, particles of skin and leaves and other extraneous matter.

Chemical Standards

Total solids shall be not less than 23%. Sugar (as total invert) shall be between 17% and 22%.

It shall be free from preservatives, added flavours, added sugar, added acids or added colouring matter. It shall contain not more than 50ppm tin as Sn and 2.5% starch. Its pH shall be between 4.70 and 5.20. It shall comply with the current regulations of the importing country concerning toxic substances. Residues of agricultural pesticides shall comply with existing American FDA limits and be an irreducible minimum.

Microbiological Standards

Howard mould count shall not be more than 4% positive fields. Insect fragments should not exceed 5 per 200 gms of material. The puree shall meet the following specifications after heating at 109°C for 10 minutes:

	Max
Total thermophiles per 10 gm sample	50
Flat sours per 10 gm sample	20

Packaging

The puree shall be packed under proper aseptic practices (according to buyer's order) either in sealed 55 gallon enamel lined steel drums or in A10 (3.29 Kilogrammes) cans, suitably lacquered on all internal surfaces.

All containers shall be new, clean, sound and rust free and the interior shall be free from extraneous solder. The containers shall be marked with a code indicating their date of manufacture. Cans shall be packed in fibreboard cases of suitable strength and quality.

Storage

Ambient temperature shall be between 32° F and 70° F, but below 60° F is preferred. Containers to be stored in clean, dry conditions for a maximum of three months.

Transport

Transport shall be under hygienic conditions and in the same ambient temperatures as for storage. The vehicle shall be free from rodent or insect infestation. The containers shall be adequately protected against transit damage and be protected from adverse weather conditions.

Other minor banana products

CANNED BANANA SLICES

Attempts have been made in several countries, notably Jamaica, Australia, the Republic of South Africa and India, to develop the commercial production of canned banana slices in syrup and small consignments from these sources have occasionally entered international trade. Limited quantities of canned banana slices are successfully processed on a commercial scale in Australia for incorporation in a tropical fruit salad pack. Most other processors have experienced difficulty in producing a product with a satisfactory colour, flavour and texture, and many of the canned slices which have appeared in the market have compared rather unfavourably with the fresh fruit and have therefore met with considerable sales resistance. However, the United Fruit Company developed the production of canned banana slices in acidified sugar syrup when they established their puree processing plant at La Lima in Honduras in 1966. The product was intended for sale to the catering and baking industries and it was considered that because of the convenience of the pack compared with that of using the fresh fruit an appreciable demand could be developed in the United Kingdom and the United States from restaurants, hotels, etc. while in certain Continental countries the baking industries were expected to be important users of these slices in the production of certain types of patisserie. In the event, it is understood that the trade has amounted to less than 100 tonnes per annum. If it were possible to overcome the technical problems in aseptically canning banana slices, this product might find an increased demand.

BANANA CHIPS

Banana chips are prepared in several countries by drying thin unripe banana slices or slices of plantain and frying the slices in edible oil to give a product similar to potato crisps. Limited quantities of these banana chips have been sold as a speciality product in the United States, but unless care is taken with their preparation and packing, they are extremely liable to become soft and rancid. They are also expensive, compared with potato chips.

The Philippines shows exports of banana chips in their trade returns. These totalled around 50 tonnes per annum until 1972, when they increased to 150 tonnes. The USA has taken nearly all of these exports, but small quantities have been sold to other Asian countries and Canada. Details of exports of banana chips from the Philippines are shown in Appendix Table 13.

BANANA JAM

Small quantities of banana jam are understood to be manufactured in certain countries, such as Brazil, for local sale, but the product is of little commercial importance; it is usually very sweet and often deficient in flavour.

Tariffs

Tariffs on banana products are as follows:

Country	Commodity	Rate (<i>ad valorem</i> unless otherwise stated)
USA	Dried bananas	3.5%
	Banana and plantain flour	7%
	Banana and plantain puree	7.5%
EEC (founder members)	Dried bananas	20%
	(Duty exemption in the German Federal Republic within a tariff quote of 398,000 tonnes for all bananas and, in all EEC countries, on imports from parties to the Lomé convention)	
	Banana flour	17%
	Banana puree	
	(i) containers of 4.5 kgs or more	23% (full rate) 18% (for developing countries on list B)
	(ii) containers of less than 4.5 kgs	25%
UK (as at 1.1.75)	Dried bananas	
	(i) general rate	16%
	(ii) certain Commonwealth developing countries, with standstill arrangements under the generalized system of preferences (G.S.P.)	Free
	(iii) other eligible developing countries with transitional rates under G.S.P.	12%
	Banana flour	
	(i) general rate	14.2%
	(ii) standstill arrangement	Free
	(iii) transitional rate	5.1%
	Banana puree	
	(i) general rate	18.6%
	(ii) standstill arrangement	Free
	(iii) transitional rate	4.4%

The UK tariffs are being harmonised with the Common Community Tariff. Two further changes, each of 20% of the difference between the UK's and the EEC's tariff existing at the time of the Treaty of Accession, will be implemented on 1 January 1976 and 1 July 1977, at which time the rates will be aligned.

Norway	Dried bananas	Free
	Banana flour	0.20 Kroners per kg
	Banana puree	1.20 Kroners per kg
Sweden	Dried bananas	Free
	Banana flour	Free
	Banana puree (from developing countries)	Free
Spain	Dried bananas	1%
	Banana flour	1%
	Banana puree	14%
Switzerland	Dried bananas	20 Frs. per 100 kg
	Banana flour	
	(i) more than 5 kg	4.50 Frs. per 100 kg
	(ii) 5 kg or less	20 Frs. per 100 kg
	Banana puree	17 Frs. per 100 kg

Austria	Dried bananas	126 Sh. per 100 kg
	Banana flour	10%
	Banana puree (15 kg or less)	23%
Canada	Dried bananas	Free
	Banana puree	1½ cts. per lb
Japan	Dried bananas	
	(i) preferential rate	Free
	(ii) GATT rate	10%
	Banana flour	25%
	Banana puree	25%

Conclusions and prospects

The sales of banana products to date have been disappointing: they account for no more than 20,000 tonnes of fresh bananas. This poor performance and the prospects can be best reviewed in the light of the general requirements for the marketing of food products.

The market for food products falls into two sectors — the sector for products intended for direct consumption by consumers and the sector for products intended for use in processed foods. Of the present banana products, figs, chips and flour are intended for direct consumption, while powder and puree are used by food processors.

Products for direct consumption normally require a combination of the following factors — convenience, competitive pricing, good quality and product differentiation. The inadequacy of banana products in these respects can be highlighted by comparison with the citrus industry in which products have been extensively produced and successfully marketed. Most citrus are difficult to peel and slightly messy to eat compared with the banana, which has been given one of Nature's 'convenience' packagings. Furthermore, the main citrus product, juices, reproduces the typical flavour well and, because it is a liquid compared with the fresh fruit 'solids', is consumed at different times and in different patterns and allows product differentiation from the fresh fruit. Thus, the marketing of citrus products has extended the market for citrus rather than the market for citrus products growing at the expense of fresh fruit sales. Banana products, on the other hand, are less easily prepared, have a poor appearance and an inferior and different taste compared with fresh bananas. They have, in short, little consumer appeal in their own right. Sales only prosper when fresh bananas are not readily available and on the rare occasions when their keepability and concentrated form are important factors, as for mountaineers and skiers. The main demand comes from vegetarians, who are, presumably, seeking variety within their restricted range of foods.

The performance of banana products in the manufacturing sector of the market has been better, because the aseptic canning process for puree has produced a product without a modified flavour which has met manufacturer's requirements with regard to good quality, durability, ease of handling and economy in transport and storage. However, even in this sector, banana products have had a limited success for a number of reasons: bananas have a rather bland flavour for processed foods and there is a preference for more acid fruit flavours; where a banana flavour is required, synthetic flavours can give a more controlled flavour at a lower price; the lack of a good quality 'solid' banana product has virtually closed markets, such as yoghurt manufacture, where solid fruit is used increasingly; and, finally, the ease with which fresh bananas can be prepared has had some effect on the demand for banana-based foods.

The only successful banana product has proved to be aseptically canned banana puree and its success is dependent on one major outlet, baby foods. Even in this case, the scope for expansion is limited. Demand for convenience foods of this

kind is found only in highly developed countries and it comes from a very narrow age range. Declining birth rates have stabilized demand in the largest markets and the growth of new markets for baby foods, such as Southern Europe, is unlikely to amount to an increase in demand of more than a few hundred tonnes per year and even this increase is unlikely to be realized fully for several years.

The conclusion must be that there is little prospect of a significant increase in demand for banana products and that there is little room in existing markets for new producers.

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Trade statistics

Note: all values in the following tables are expressed in US dollars.

Table A1
Exports from Ecuador

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
'Banano preparado'										
Totals			1923 719	2047 706	1612 557	1760 633	1937 711	2250 810	2103 752	2424 869
Source: <i>Boletín del Banco Central del Ecuador</i>										
'Frutas preparados o conservados en otra forma; la demás'										
Totals	1204 390.6	1363 442.0	1999 ...	2042 711.4	1198 388.2	...	...	2199 794.9	...	2737 988.8
of which to:										
France	93 30.1	195 62.3	293 ...	321 99.2	292 89.2			585 179.1		640 164.1
Germany, Federal Republic of	338 109.1	338 108.0	403 ...	328 116.1	253 86.1			533 233.0		559 236.6
Netherlands	13 3.8	280 94.3	293 ...	54 18.0	10 3.3			2 20.8		9 2.9
Switzerland	346 113.5	70 22.6	...	273 88.6	204 65.7			241 72.5		206 62.3
United Kingdom	42 12.2	47 15.6	...	30 9.9	35 11.1			59 19.0		53 17.1
Japan	341 112.0	379 122.0	653 ...	716 211.2	300 91.3			299 85.5		275 79.2
USA	1 0.3	—	282 ...	277 131.0	50 24.2			378 177.3		895 391.7
Others	17 5.7	48 15.2	75 ...	53 37.4	54 17.2			102 27.7		100 34.9

Footnotes: Figures in the text are based on Comercio Exterior up to 1965 and thereafter on Boletín del Banco Central, except for the estimates of apparent imports into the Netherlands and Switzerland (shown in Table 2) in which cases it was necessary to use Comercio Exterior, even though the figures used may include some other fruit products after 1965.

— nil or negligible ... not available

Source: Comercio Exterior. La Junta Nacional de Planificación y Co-ordinación

Table A2

Dried Bananas: Exports from Malagasy Republic

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Totals	605 75.2	149 22.8	441 50.9	275 32.0	257 28.4	163 21.9	138 14.5	225 21.8	8 0.7	57 6.7
of which to:—										
France	605 75.2	143 20.0	439 50.3	275 31.8	256 27.9	161 20.3	138 14.5	225 21.8	8 0.7	57 6.7
Switzerland	—	4 1.8	—	—	—	—	—	—	—	—
Reunion	—	2 1.0	2 0.6	—	1 0.5	2 1.5	—	—	—	—
Other Countries	—	—	—	—	—	—	—	—	—	—

Footnote: — nil or negligible

Source: Institut National de la Statistique et de la Recherche Economique

Table A3
Dried bananas: Exports from Brazil

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Total	30 11.0	124 67.6	156 83.1	20 7.5	14 15.0	8 8.1	3 4.3	7 4.5	378(a) 105.7	20 13.5
of which to:										
Argentina	1 0.3	1 0.3	39 24.3	2 0.8	—	—	—	—	247(a) 13.2	—
Belgium—Luxembourg	—	—	—	—	—	—	—	—	75 52.6	—
Canada	—	—	—	—	—	—	—	—	4 2.5	—
USA	5 1.0	43 25.1	87 44.6	8 3.5	2 1.0	5 2.3	3 1.3	7 4.5	51 35.3	17 10.0
France	23 7.8	16 5.8	23 10.2	—	—	—	—	—	—	—
Japan	1 0.5	4 2.5	2 1.4	—	—	—	—	—	—	—
Germany, Federal Republic of	—	61 33.6	5 2.7	—	3 0.9	3 5.5	—	—	—	—
Switzerland	1 0.5	—	—	—	4 11.1	—	—	—	—	—
Italy	—	—	—	—	1 0.4	—	—	—	—	—
Netherlands	—	—	—	10 3.2	5 1.5	—	—	—	—	—
United Kingdom	—	—	—	—	—	—	—	—	—	3 3.4

Footnotes: — nil or negligible
(a) Exports in 1971 appear to include 247 tonnes of fresh fruit to Argentina. This assumption is based on the value of these exports, which if subtracted from the total suggests total exports of dried bananas of 131 tonnes valued at \$92,419,000.

Source: *Commercio Exterior do Brasil*. Ministerio da Fazenda

Table A4

Dried bananas: Exports from Angola

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Totals	68.9 31.0	65.8 25.9	51.5 19.9	32.5 11.9	12.7 7.1	12.8 6.3	9.1 3.7	5.8 2.3	5.8 2.4	4.3 1.3
of which to:										
Denmark	0.4 0.3	— —	0.9 0.5	1.8 1.1	— —	— —	— —	— —	— —	— —
Germany, Federal Republic of	60.1 27.2	53.7 20.2	43.3 17.1	20.7 8.0	— —	6.7 3.3	— —	— —	1.2 0.5	— —
Portugal	0.8 0.3	1.7 0.9	2.7 0.2	— —	0.8 0.4	1.5 0.7	0.6 0.3	— —	— —	— —
Sweden	6.6 3.2	9.7 4.6	5.5 2.6	10.9 3.4	9.6 5.3	2.4 1.3	5.3 2.3	4.5 1.9	4.6 1.9	4.3 1.3
South Africa	— —	— —	— —	— —	0.5 0.3	2.1 1.0	2.9 1.0	1.3 0.4	— —	— —
Other Countries	1.0 —	0.2 —	— —	— —	— —	0.1 —	0.3 0.1	— —	— —	— —

Footnote: — nil or negligible

Source: *Comercio Externo* Reparticao Tecnica de Estadistica Geral

Table A5
Dried bananas: Imports into France

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Totals	717 168.1	416 121.6	785 212.2	691 185.0	636 175.2	540 161.2	653 202.7	713 197.7	641 196.3	605 180.2	568 202.3
of which from:											
Madagascar	540 89.1	146 30.4	460 89.3	373 61.0	243 36.9	112 17.0	166 25.0	204 27.5	84 11.3	...	...
Brazil	34 15.3	—	—	—	—	—	—	—	—	—	—
Ecuador	101 36.7	196 68.6	307 114.2	311 121.2	360 133.5	416 142.2	487 177.7	504 167.4	557 184.9	578 174.9	535 195.3
French Polynesia	13 15.3	—	—	—	—	—	—	—	—	—	—
Other Countries	29 11.7	74 22.6	18 8.7	7 2.8	33 4.8	12 2.0	—	5 2.8	—	27 5.3	33 7.0

Footnotes: ... Information not shown — nil or negligible
Source: *Commerce Extérieur* Direction Generale des douanes et Droits Indirectes

Table A6

Dried bananas: Imports into The Federal Republic of Germany

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Totals	tonnes \$'000	421 186.1	389 191.7	277 142.0	286 161.0	384 261.0	401 281.4	365 244.0	498 380.7	428 348.4	393 317.4
of which from:											
Taiwan	tonnes \$'000	— —	— —	— —	— —	— —	— —	— —	7 22.0	8 29.5	— —
Angola	tonnes \$'000	54 24.9	52 23.9	22 12.0	— —	— —	— —	— —	— —	— —	— —
Brazil	tonnes \$'000	90 52.6	83 48.3	32 19.8	33 20.8	14 9.8	29 23.0	— —	— —	— —	— —
Ecuador	tonnes \$'000	240 86.0	255 107.4	223 110.2	253 140.2	363 248.0	366 253.3	365 244.0	474 340.9	420 318.9	392 314.5
Panama	tonnes \$'000	— —	— —	— —	— —	— —	5 5.1	— —	17 17.7	— —	— —
Other Countries	tonnes \$'000	8 3.8	31 6.5	16 1.3	— —	7 3.2	1 —	— —	0.1 —	— —	1 1.9

Footnote: — nil or negligible
Source: Der Aussenhandel Statistisches Bundesamt

Table A7

Dried bananas: Imports into Japan

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Totals	289 109.1	400 151.4	600 222.0	747 280.3	403 149.5	366 126.6	323 109.3	312 102.5	345 117.5	264 88.6	260 133.0
of which from:											
China	—	—	10 3.6	40 16.6	37 14.8	45 17.0	28 11.4	—	—	—	—
Formosa	7 4.0	8 3.0	—	—	—	—	—	—	—	—	—
Hong Kong	—	—	—	10 4.4	—	—	—	—	—	—	—
Philippines	—	—	—	—	—	—	—	—	—	1 1.4	0.4
Singapore	—	—	—	—	10 3.7	9 2.8	2 0.6	—	—	—	—
Taiwan	—	—	—	4 1.9	5 4.0	—	—	—	—	—	2 1.8
Thailand	10 2.6	—	2 0.7	14 3.8	—	—	—	—	—	—	—
Ecuador	268 100.7	387 146.4	588 217.6	678 253.2	351 127.1	312 106.8	294 97.3	312 102.5	345 116.9	263 87.2	258 130.8
Salvador	—	5 2.0	—	—	—	—	—	—	—	—	—
Other Countries	—	—	—	1 0.4	—	—	1 0.1	—	—	—	—

Footnote: — nil or negligible

Source: Trade of Japan. Japan Tariff Association

Table A8
Dried bananas: Imports into the USA

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Totals	75 44.2	176 126.0	355 277.2	315 202.5	388 256.4	391 278.8	408 332.3	398 314.6	449 371.9	657 552.7
of which from:										
Philippines	tonnes									
	\$'000									
Taiwan	tonnes	—	—	5	2	9	2	1	—	—
	\$'000	—	—	6.1	3.0	8.8	2.0	1.0	—	—
Bolivia	tonnes	—	—	1	—	—	—	1	8	1
	\$'000	—	—	0.6	—	—	—	0.5	7.3	1.6
Brazil	tonnes	—	—	—	—	—	—	—	—	—
	\$'000	—	—	—	—	—	—	—	—	—
Ecuador	tonnes	75 44.2	120 76.1	102 57.4	77 49.0	65 43.9	60 54.8	60 45.5	62 47.5	69 53.7
	\$'000	—	18	202	306	313	345	336	370	585
Panama	tonnes	—	16.0	133.6	202.6	226.1	273.6	266.8	310.8	489.3
	\$'000	—	18	5	—	—	—	—	7	—
Other Countries	tonnes	—	16.0	3.0	—	—	—	—	5.4	—
	\$'000	—	1	—	3	4	1	—	—	2
		—	1.2	0.5	1.8	—	2.0	0.8	0.9	8.1

Footnote: — nil or negligible
Source: Bureau of the Census Report FT110 Dept. of Commerce

Table A9
Banana puree: Exports from the Dominican Republic

		1963	1964	1965
Totals	tonnes	4169	3934	7152
	\$'000	799	738	1376
of which to:				
Germany, Federal Republic of	tonnes	90	505	829
	\$'000	17	99	159
Netherlands	tonnes	360	232	374
	\$'000	69	25	72
Sweden	tonnes	43	—	—
	\$'000	9	—	—
United Kingdom	tonnes	48	—	181
	\$'000	9	—	35
Japan	tonnes	—	—	18
	\$'000	—	—	8
Costa Rica	tonnes	668	—	—
	\$'000	128	—	—
Honduras	tonnes	—	—	607
	\$'000	—	—	116
Panama	tonnes	—	—	253
	\$'000	—	—	48
USA	tonnes	2958	3196	4890
	\$'000	567	614	938
Other Countries	tonnes	2	1	—
	\$'000	—	—	—

Footnotes: Information is only shown in the periods as above. — nil or negligible

Source: Annual Overseas Trade Report Treasury Dept.

Table A10
Dried, canned and preserved fruits: Exports from Honduras

		1963	1964	1965	1966	1967	1968	1969
Totals	tonnes	—	—	—	1112	7002	10295	11953
	\$'000	—	—	—	214	1378	2064	2333
of which to:								
France	tonnes	—	—	—	—	—	—	1938
	\$'000	—	—	—	—	—	—	393
Germany, Federal Republic of	tonnes	—	—	—	371	1087	1682	1916
	\$'000	—	—	—	71	213	336	388
United Kingdom	tonnes	—	—	—	34	497	470	319
	\$'000	—	—	—	7	98	96	65
Japan	tonnes	—	—	—	—	—	—	7
	\$'000	—	—	—	—	—	—	1
El Salvador	tonnes	—	—	—	3	—	—	—
	\$'000	—	—	—	2	—	—	—
USA	tonnes	—	—	—	704	5417	8142	7770
	\$'000	—	—	—	135	1067	1631	1485
Other Countries	tonnes	—	—	—	—	—	1	3
	\$'000	—	—	—	—	—	1	1

Footnote: — nil or negligible

Source: Comercio Exterior Direccion General de Estadistica y Censos

Table A11
Banana puree: Imports into the USA

		1968	1969	1970	1971
Total	tonnes	6642	5280	6315	7246
	\$'000	1127.8	825.3	925.6	1045.3
of which from:					
Mexico	tonnes	173	208	183	924
	\$'000	34.9	41.2	37.5	154.9
Guatemala	tonnes	57	4	—	—
	\$'000	9.5	1.4		
British Honduras	tonnes	94	13	—	—
	\$'000	16.5	2.0		
Honduras	tonnes	6266	5055	5953	6321
	\$'000	1058.5	780.7	860.7	889.4
Nicaragua	tonnes	52	—	—	—
	\$'000	8.5	—		
Haiti	tonnes	—	—	179	—
	\$'000			27.4	
Others	tonnes	—	—	—	2
	\$'000				1.0

Footnote: — nil or negligible
Source: *Foreign Trade* US Department of Commerce

Table A12

Banana puree: Imports into various consuming countries

		1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
FRANCE	Total	...	48 16.7	67 23.3	43 15.1	76 26.1	83 28.0	56 20.5	56 20.5	218 72.6	292 96.8	235 85.4
of which from												
Dominican Republic	tonnes '000 US \$	...	48 16.7	67 23.3	43 15.1	—	—	—	—	—	—	—
Honduras	tonnes '000 US \$	—	—	—	—	76 26.1	83 28.0	56 20.5	56 20.5	218 72.6	292 96.8	48 17.8
Panama	tonnes '000 US \$	—	—	—	—	—	—	—	—	—	—	187 67.6
GERMANY, F.R.	Total	41 13.6	212 66.4	323 103.3	448 152.1	434 135.8	543 186	1383 464	990 388	931 349.3	1408 455	1280 504.1
of which from												
Dominican Republic	tonnes '000 US \$	41 13.6	212 66.4	323 103.3	383 129.7	—	—	—	—	—	—	—
Honduras	tonnes '000 US \$	—	—	—	65 22.4	434 135.8	543 186	1383 464	990 388	931 349.3	1408 455	385 154.6
Panama	tonnes '000 US \$	—	—	—	—	—	—	—	—	—	—	895 349.6
ITALY	Total	4 1.1	52 20.9	—	26 9.6	31 11.1	64 24	112 43.2	200 72.4	327 106.5	219 53.6	...
of which from												
Dominican Republic	tonnes '000 US \$	4 1.1	52 20.9	—	5.4 2.3	—	—	—	—	—	—	—
Honduras	tonnes '000 US \$	—	—	—	21 7.3	31 11.1	64 24	112 43.2	200 72.4	327 106.5	152 39.5	...
Panama	tonnes '000 US \$	—	—	—	—	—	—	—	—	—	67 14.1	...
NETHERLANDS	Total	—	69 22.0	57 17.2	16 4.7	12 3.6	15 4.7	—	57 20	50 15.7	138 48.3	112 47.1
of which from												
Dominican Republic	tonnes '000 US \$	—	69 22.0	57 17.2	16 4.7	—	—	—	—	—	—	—
Honduras	tonnes '000 US \$	—	—	—	—	—	15 4.7	—	57 20	50 15.7	115 40.2	61 26.2
Panama	tonnes '000 US \$	—	—	—	—	12* 3.6	—	—	—	—	23 8.1	51 20.9

*Brazil

Table A12—continued

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
BELGIUM—LUXEMBOURG	...	...	...	...	...	5	4	16	12	7	...
of which from						3	1	4	3	3	
Honduras						5	4	16	12	7	
						3	1	4	3	3	
UNITED KINGDOM	94	17	228	—	131	500	461	295	243	378	430
Total	26.5	6.4	65.9	—	48.3	167.0	159.7	109.2	83.9	122.7	168.4
of which from											
Dominican Rep	94	17	228	—	3	—	—	—	—	—	—
Honduras	26.5	6.4	65.9	—	1.1	—	—	—	—	—	—
Panama	—	—	—	—	128	500	461	295	243	378	352
	—	—	—	—	47.2	167.0	159.7	109.2	83.9	122.7	139.8
	—	—	—	—	—	—	—	—	—	—	78
	—	—	—	—	—	—	—	—	—	—	28.6
JAPAN	—	15	31	32	49	28	65	89	181	273	158
Total	—	5.2	14.5	14.8	23.6	13.3	30.8	33.9	63.7	98.3	52.6
of which from											
Dominican Rep.	—	15	31	32	27	8	—	—	—	—	—
Honduras	—	5.2	14.5	14.8	13.4	3.9	—	—	—	—	—
	—	—	—	—	22	20	65	89	181	273	158
	—	—	—	—	10.3	9.3	30.8	33.9	63.7	98.3	52.6
CANADA	204	294	128	328	591	535	540	536	517	419	430
Total	81.4	91.5	40.8	99.8	177.7	144.2	147.2	152.2	147.5	123.1	127
of which from											
Dominican Republic	204	294	128	291	—	—	—	—	—	—	—
Honduras	81.4	91.5	40.8	88.8	—	—	—	—	—	—	—
	—	—	—	37	591	535	540	536	517	419	430
	—	—	—	11.0	177.7	144.2	147.2	152.2	147.5	123.1	127.0
SWITZERLAND	—	—	29	30	24	135	63	260	171	229	317
Total	—	—	9.2	10.3	7.5	46.4	23.0	87.4	63.7	88.0	127.8
of which from											
Dominican Republic	—	—	29	30	11	—	—	—	—	—	—
Honduras	—	—	9.2	10.3	3.4	—	—	—	—	—	—
Panama	—	—	—	—	13	135	63	260	171	229	96
	—	—	—	—	4.1	46.4	23.0	87.4	63.7	88.0	42.6
	—	—	—	—	—	—	—	—	—	—	221
	—	—	—	—	—	—	—	—	—	—	85.2

Table A12—continued

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
AUSTRIA											
Total				1	—	41	35	66	44	40	53
of which from				0.4		14.3	12.8	23.2	16.8	15.2	22.4
Dominican Republic	—	—	—	—	—	—	—	—	—	—	—
Honduras	—	—	—	—	—	41	35	66	44	30	16.4
Panama	—	—	—	—	—	14.3	12.8	23.2	16.8	11.4	8.1
										10	36
										3.9	14.3
SPAIN											
Total	—	—	—	—	9	7	19	4	51	63	8
of which from					3.3	2.6	8.1	1.9	20.8	25.6	3.4
Honduras	—	—	—	—	9	7	19	4	51	63	8
					3.3	2.6	8.1	1.9	20.8	25.6	3.4
SWEDEN											
Total	40	11	36	15	30	26	25	23	34	67	60
of which from	14.0	3.9	11.8	5.0	10.6	8.5	9.9	8.9	14.1	28.8	27.1
Dominican Rep	40	11	36	15	—	—	—	—	—	—	—
Honduras	14.0	3.9	11.8	5.0	—	—	—	—	—	—	—
Panama	—	—	—	—	30	26	25	23	34	67	50
					10.6	8.5	9.9	8.9	14.1	28.8	22.7
					—	—	—	—	—	—	10
					—	—	—	—	—	—	4.4

Footnotes: — nil or negligible ... not available

Sources: Trade Returns

Table A13

Banana chips: Exports from the Philippines

	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Totals										
of which to:										
Finland	1.0	13.4	65.0	57.9	73.7	47.4	34.8	36.3	69.8	150.4
	0.7	17.6	81.8	81.4	80.5	63.4	70.8	91.1	84.2	159.8
Sweden	—	—	—	—	—	—	—	—	—	—
	—	—	—	3.4	35.3	—	—	—	—	—
	—	—	—	2.7	39.6	—	—	—	—	—
Guam (USA)	—	—	0.5	0.5	—	—	0.3	0.2	0.7	0.1
	—	—	0.6	0.7	—	—	0.3	0.5	1.3	0.1
Hong Kong	—	—	1.4	—	—	—	—	—	2.8	2.1
	—	—	1.7	—	—	—	—	—	1.8	2.3
Japan	1.0	—	8.9	3.8	3.6	—	—	0.5	4.4	22.2
	0.7	—	7.5	4.4	3.8	—	—	1.4	3.4	32.1
Canada	—	—	3.0	—	—	—	—	—	0.1	1.4
	—	—	1.5	—	—	—	—	—	0.1	2.3
Hawaii	—	—	—	0.7	—	1.7	0.3	—	0.8	0.4
	—	—	—	1.0	—	2.4	0.5	—	1.0	0.6
USA	—	13.4	50.2	48.0	32.0	44.9	34.2	35.4	60.2	116.4
	—	17.6	69.5	70.6	33.0	59.8	70.0	89.0	75.7	114.7
Australia	—	—	—	0.3	1.4	0.8	—	0.1	0.3	0.1
	—	—	—	0.4	1.7	1.2	—	0.2	0.4	0.2
Other countries	—	—	1.0	1.2	1.4	—	—	0.1	0.5	1.5
	—	—	1.0	1.6	2.4	—	—	—	0.5	1.5

Footnote: — nil or negligible

Source: Foreign Trade Statistics Dept. of Commerce and Industry.

